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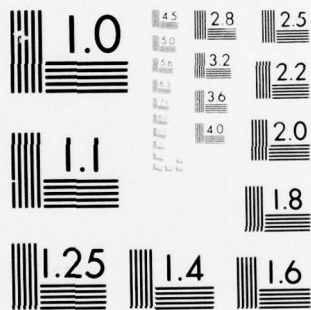
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PUBLIC POLICY ASPECTS FOR AN INFORMATION AGE *

This occasion is one of special pleasure for me. At one time I had considered coming to Dartmouth for graduate school, and while I did not, at long last I have an opportunity to see what I missed. Another reason I might call the Kemeny Connection. I was privileged to be part of John von Neumann's group at the Institute for Advanced Study building his machine; John Kemeny at the time was also there as Albert Einstein's personal assistant. From time to time we would see John Kemeny at the Project; he also made a few pertinent remarks about a doctoral dissertation that I was trying to get finished. At the time there was no indication that the computer bug was biting him, but evidently the early exposure to it must have had some effect. Look what he caused to happen here at Dartmouth; look at what he has caused to take place with the computer as an educational tool, as a research tool, as an administrative tool, and as a record keeper. It is very proper that he should have made such events happen.

I did not attend the dedication of the Kiewit Computing Center ten years ago, but I can imagine the tone at the time was "Gee Whiz, look what computing is going to do for us here." If we were to characterize this symposium, I think it would be: "Holy smokes, look what it has done for us." Look what the computer has done to us in terms of funding support required; look what it has done to us organizationally; look what it has done to us by providing new ways to do old things; look at the relocation of power that has taken place. With such a lament toward the past however, there must also be an anticipation of the future; the best is yet to come.

Computer technology has paralleled what must be an inevitable course for any technology. There is an initial period of understanding and of finding it useful for things clearly good. Then there is a period of intense and perhaps wild exploitation; then a period of finding it being

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* A talk presented on the occasion of a symposium to celebrate the 10th anniversary of the Kiewit Computing Center, Dartmouth College, November 30, 1976.

cont

→ used in bad ways. Finally, the realization emerges that no technology stands alone, that it influences society and existing institutions, and that it interacts with concepts already in place. Of the many ways that a computer can be used, ^{this talk} ~~it~~ will concentrate ~~today~~ on its role as a record-keeper for information about people. ↗

First, let me emphasize the staggering growth of computer technology. At its inception in the 30s when mechanical computing began, operations were performed one or a few per second. Today, machines function at millions of operations per second. From 1 to a few million represents 6 to 7 factors of 10 in the growth in speed that has occurred. Estimates of future growth yet to go have been attempted; and with reasonable confidence, one can predict that there is another factor of 100 or perhaps another factor of 1000. There is at least another 2 or 3 factors of 10 yet to go. By the magic year 2000, computer technology will have advanced by a factor of 9 or 10 factors of 10 -- 10^9 or 10^{10} , which is a huge number. There are corresponding growth factors in other dimensions such as size. By contrast, a technology that each of us experiences daily--transportation-- has progressed from walking to the supersonic jets by only a factor of a thousand. Even if one envisions orbital transportation, it is only a factor of 10,000--from about 2 miles per hour to 20,000. We readily appreciate the impact that transportation technology has had on each of us as individuals. One goes to London and back the same day for a few-hour business meeting; one has meetings like this--anywhere with people from everywhere. Transportation has made society mobile, and created all the supporting services that go with mobility. We even have a new phenomenon--jet lag--and the implications for research on biorhythms. Understanding what transportation has done to us as a society and a country, we ought not be surprised that a technology like that of the computer, with its enormous growth relative to anything else, has had and will continue to have profound effects on society and its institutions.

Another line of argument is that we are a large country--a population over 200 million. Each of us leads a complex life. As a country we run large social programs, each of them having a requirement for accountability. We demand many services from government; social and

private institutions are large. The sheer size of the country viewed as an organizational endeavor, its complexity and the growing need to keep costs in hand, implies a scale of record-keeping that is unprecedented in history, record-keeping that largely involves information about people. Our social institutions--industrial, educational, governmental--have enormous needs today for information about people just to be able to function. On top of all that, information has been discovered for its own intrinsic value; it is now a marketable commodity. It can be bought, it can be sold and exchanged.

A third dimension of the argument relates to the situation surrounding use of information. An individual has no standing in law with regard to information about himself; he has no right of ownership. There are essentially no legal controls over the use of information, although there are occasional controls over its misuse--libel and slander. Except for a very few instances, census data being one of them, there is no legal protection against seizure of personal information by judicial process. Thus, the intersection between information needs of modern society and computer technology set in a legally unconstrained environment has led to a situation in which vast amounts of information about people exists in record systems--both computers and manual. The information circulates rather readily and is used freely by the record holder for the convenience, profit or efficiency of the organization. Collateral uses of information for purposes quite different from that of its original collection have sprung into use; the mail list is one of the less objectionable ones. Access to many record-keeping systems in the country is open to government agencies, sometimes for legally mandated purposes, but often not. Computer based record systems are playing major roles in determinations made about people, ones that involve rights, privileges, benefits, and opportunities.

The net of it is that we have a very one sided situation with all the chips held by the record keeper. Obviously in such a circumstance, there can be manifold opportunities for abuse or misuse of information, and risks that individuals will suffer unwarranted harm. From these circumstances come what today is commonly called privacy. It is not a new problem; there has always been a need for information about people, and there has always been traffic in information about people. For example,

we have been conducting a census in the country almost from the beginning. What is different today is the magnitude of record-keeping--new kinds of record systems, record-keeping by computer, new uses for information, new kinds of records. The computer has done as it so often does; it takes a long standing chronic problem and makes it an acute one, in this case one of broad social concern.

In the context of record-keeping systems, privacy can be defined as the social expectation that an individual (a) will have some control over how, when and to whom information about himself is communicated; (b) have protection against unwarranted harm because of the functioning of some record system; and (c) have protection against unwelcome, unfair, or excessive collection of information. Such is the current privacy issue.

My present perception of the social goals that the privacy movement is serving are these. First, we are trying to assure that the public is well informed, collectively and individually, on record-keeping matters that affect people and influence citizens. So to speak, an important goal is to raise the "information IQ" of the public. Secondly, we are trying to strike a balance in the country between the genuine and well founded needs of government and of private industry for information about people, and the right of such people to have some control over the use of information about them. We are searching for an appropriate balance point. Third, we are trying to assure fair use of personal information, especially when it is involved in making a determination about an individual. Fourth, we are trying to minimize unnecessary and intrusive information collection. The fifth goal is a very subtle one, not fully within the realm of privacy. We are trying to minimize the risk of inadvertently creating an all-encompassing set of record systems, each linked with the other, that make usurpation of power possible. I am persuaded that as a country we must minimize the risk that our record-keeping infrastructure will upset the balance of power in the present structure of government and society.

The genesis of record keeping privacy as such was in the early 70s with the books of Alan Westin, Arthur Miller, and James Rule. The subject came into very sharp focus when Secretary Richardson, then of the Department of Health, Education and Welfare, assembled a Special Advisory Committee on Automated Personal Data systems. Its report, "Records,

Computers and the Rights of Citizens", was published in July of 1973 and was a definitive treatment of the subject. It has strongly influenced nearly everything that has happened subsequently. The report was not only a comprehensive treatment of the subject but it also made very important intellectual contributions. For example, it introduced the notion that the record-keeper and the data subject both have an interest in seeing that information is used fairly. It introduced the notion that the situation should be governed through a code of Fair Information Practice. It even suggested what such a code might contain. One can recognize aspects of all these things in present legislation, and in the dialogue on the subject.

There have been numerous legislative attempts to address some aspect of privacy--the Fair Credit Reporting Act, the Fair Credit Billing Act, the Equal Opportunity Employment Act, and the Equal Opportunity Credit Act. Each of them is a rifle-shot approach targeting some specific information area. In contrast, the Privacy Act of 1974 is an omnibus approach that throws a broad umbrella of behavior and citizen privileges over federal record-keeping systems. The 1974 Act also created the Privacy Protection Study Commission whose work is presently in progress and which is scheduled to complete its task in June of 1977, at which time the Commission is obligated to make recommendations to Congress and to the President on the next step to protect privacy. High on our list of concern is the private sector, which at the moment is under no privacy legislation except for the few rifle-shot ones mentioned. The Commission has held hearings on the major types of record-keeping systems, e.g., research/statistical, employment, personnel, medical insurance, depository, credit. We are currently in the phase of trying to understand what our data base is telling us, where the abuses are and what the remedies might be. It is one thing to conceive remedies, but quite another to balance them against the cost of implementing them. We will try to judge whether the remedies justify the cost.

While I can speak about the Book of Genesis for privacy, I cannot tell you much about its Book of Revelation. The Commission has not finished its job, and we have no preconceived notions of whether an omnibus approach or multiple rifle-shot approaches are appropriate.

As we have worked through hearings and my understanding of the issue has deepened, it has become apparent that when we terminate in June of 1977, by no means will we have exhausted the subject. While the privacy issue will probably be taken care of under that particular name, there is another and much larger issue that I want to suggest; I think it is important and is coming. I have not yet found the precisely correct label for it, but it is something like "public policy on information." Let me speak to it by example. An obvious aspect of information is the right of ownership question. Do we need a legal standing for information about one's self? The problem has already surfaced as the country has reexamined its copyright laws, but it will surface in other dimensions. For example, under California law a hospital owns its records. My name is on such records and yet it is clear that a hospital does not own my name-- I am obviously free to use it as I always have. One has to ask: What does ownership of information mean? Does it mean owning a particular representation of it as written on paper, or as recorded on magnetic tape, or as a pattern of voltages in a computer? Do we need to worry about ownership of parts of a record? Might I, the individual, have ownership over data about me that I have provided to a hospital, whereas the hospital owns the part of the record that it has constructed from whatever medical treatment it has performed? I do not know the answer, but obviously the question of ownership is going to face us one day soon.

A second example. An airline reservation system, an electronic bank terminal and a point-of-sale system all have an interesting and common characteristic; each captures information about some aspect of human behavior. One of them knows the whereabouts of individuals; another knows his buying preferences, or his financial habits, or his preferred charities. By inference, each contains a body of information with overtones of surveillance, but such systems were not created for surveillance. They were created to do a job; and to do it, each unavoidably captures information about people's habits. Nonetheless, there is created a body of information that is potentially exploitable for surveillance purposes, if someone is so inclined. Someone will be so inclined; it is likely to happen because people are not perfect. Someone will "discover" such a body of information and use or exploit it in ways that are quite tangential to the purpose

for which it was collected. I suggest that we perhaps need a public policy for information of such kind to make certain that it does not fall into unintended and undesirable social useage. Perhaps we should pay especial attention to such bodies of information as the Fair Credit Reporting Act has paid especial attention to credit reporting information.

A third possibility. When a physician treats a patient, he records two kinds of information. He records facts about health status, and laboratory findings; but he also records his own views, insights and conjectures. The two kinds are fundamentally different. One is very factual, but the other is conjectural, or anecdotal, or episodic; it amounts to cues to himself. One kind of information, the factual, records the progress of a patient through medical treatment, whereas the other kind assists the physician in managing the progress of a patient through some course of treatment.

Educational records have the same characteristic. One part records the factual things about the student--grades, courses, honors. Another part, especially in the public school system, documents the anecdotal and behavioral notes put there by teachers or advisers with the intent of managing the student through his educational experience. Perhaps we will need public policy dealing differently with the two kinds of information.

A fourth example. There are increasingly many computer-controlled situations--traffic flow, air flight, power plants, especially nuclear, power grids, industrial processes such as oil refineries. Moreover, decisions formerly made by people are now being delegated to computers to make automatically. Quite aside from the safety aspects and quite aside from certifying systems, one wonders whether the liability laws of the nation are adequate for coming circumstances. Certainly one has to ask: Do we need to re-examine the liability laws when public safety is at risk? Certainly one cannot help but wondering about consequences to the insurance industry when it is asked to write a policy of huge face value against an event of very low probability of occurrence.

Put the picture together in a different way. Information is a universal commodity. It makes organizations run; it makes processes run; it makes each of us as a biological organism run. Computers deal in information in very general ways. Therefore, computer technology is becoming

and will increasingly become all pervasive--a point that very few managements seem to understand. What has occurred in the last 25 years is minimal compared to what we have yet to see. I, as anyone, would find it hard to imagine what is ahead. Already there are computers in automobiles, washing machines and radar ranges. Simple computer-based games already exist; sophisticated entertainment and educational ones are ahead. There are already computer based systems that play major roles in decisions about people. Computers influence our lives daily in very subtle and frequently invisible ways, and in that sense computer technology is being used to tighten the processes of society. Minimization of financial float in an electronic fund environment is one small and minor example. Others include being deterred by more complete information from exploiting record systems for one's self interest, (e.g., multiple airline reservations) or being unable to lose a past identity and establish a new one.

As a country, we may have to face the question: How tight will we allow our society to become through wholesale exploitation of computer technology for record-keeping? Many record-keeping applications are obviously socially desirable and one would have no trouble with them, especially if they apprehend people who are skirting or breaking the law. A parent-locator system, for example, attempts to find defecting parents and require them to assume the legal obligation to support children. A national driver registry attempts to catch the driver who, having lost his license in one state tries to get one in the neighboring state. There are others that, while socially desirable in principle, are really quite distasteful, for example, using a list of alien school children to attempt to locate illegal immigrants. Others are downright disturbing. The so-called bank secrecy act causes banks to maintain records on a whole host of transactions, and to report certain of them. Therefore, a government agency, in attempting to establish evidence of crime or just seeking clues to possible crime, may well browse through records of well-behaved and innocent people. There is a tinge of a seizure-without-search-warrant issue in the example.

It is to be noted that record-keeping systems that tend to tighten social processes must be absolutely accurate and identify records and individuals correctly each time. Otherwise innocent people will be harmed in some way, at least be inconvenienced, possibly embarrassed, or dragged unnecessarily through court or legal processes. How much

tightening do we as society wish to tolerate? How much looseness of society do we like so well that we are willing to underwrite it financially and not use computers for some purposes?

The big-big question: How do we as a country and as a society construct the framework--partly legal, partly voluntary code compliance, partly professional ethics, partly administrative procedures, partly insurance--that will permit us to exploit the wonderful world of computing technology and its ability to manipulate information for the benefit of each and all of us while assuring that no one is treated unfairly or harmed by a record system? If harmed, what is the basis for redress and recovery of damages? How do we avoid inadvertently creating an information monster that will dramatically change the culture and the societal system that we have developed over 200 years and presumably prefer? Of this big-big question, privacy is but one small corner; I've tried to suggest other pieces of it. There is a lot ahead to be done for me and my colleagues, but there is also much for you as an educational institution, and as a faculty that is training students for the world I project. There is much ahead for students who are just developing an appreciation and awareness of the computer and what it can do. I certainly trust that the faculty will understand and communicate to the student that there is much need for technically trained people in public policy matters; I hope that Dartmouth will produce many such people.